A NEW SPECIES OF HYLID FROG FROM NEW SOUTH WALES

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(Plate II)

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Synopsis

A new species of *Litoria* from central coastal New South Wales is described. Its variation and affinities are examined and it is considered to be most closely related to *L. citropa* (Tschudi).

Introduction

The anuran fauna of New South Wales has received considerable attention and has been demonstrated to be a rich and diverse assemblage. Cogger (1960) recorded 45 species of frogs from the State, and Moore (1961) recognized 43.

In recent years further studies have modified and increased the content, and have affected the nomenclature of Moore's checklist of species : Littlejohn and Martin (1964) restored *Crinia victoriana* Boulenger to specific status and reported its occurrence in the extreme south-east of the state ; Littlejohn (1965) resurrected *Hyla verreauxi* (Dumeril) from the synonymy of *H. ewingi* Dumeril and Bibron and found both species in New South Wales ; Straughan and Main (1966) reported *Crinia darlingtoni* Loveridge from the north-eastern border of the State ; Straughan (1968) described two new species of *Mixophyes* Günther ; Straughan (1969) elevated *Hyla bicolor glauerti* Copland to specific status ; and Tyler (1971) resurrected *Litoria* Tschudi to accommodate the Australian species formerly referred to *Hyla* Laurenti.

In January, 1970, two of us (Martin and Watson) collected representatives of an undescribed species of *Litoria* near Byabarra, approximately 190 miles north-north-east of Sydney. Additional representatives of this species have been found subsequently by other collectors at adjacent localities. In our description of the new species we follow the methods and terminology of Tyler (1968). The abbreviations used in the text are : E–N/IN = eye to naris distance/internarial span ; HL/HW = head length/head width ; HL/S–V = head length/snout to vent length ; TL/S–V = tibia length/snout to vent length.

Litoria brevipalmata n. sp.

Holotype. South Australian Museum No. R.11236. An adult male collected at Ourimbah Creek, about five miles north-west of Gosford, New South Wales, by F. Parker, on 29th January, 1971.

Definition. A moderate-sized species (males 41·0 mm. ; females 45·2–47·4 mm.) characterized by short hind limbs (TL/S–V ratio 0·409–0·459), unwebbed fingers and greatly reduced webbing between the toes. The dorsal surface of the head, body and limbs are immaculate, pale brown ; there is a continuous, broad, black stripe extending from the post-orbital margin to the axilla, bordered inferiorly by a narrow, white labial stripe.

Description of holotype. The head is smoothly rounded and slightly longer than broad (HL/HW 1·128). In relation to the body size the head is moderate, its length being approximately one-third of the snout to vent length (HL/S–V 0·324). The snout is not prominent and does not project conspicuously beyond the anterior limit of the mandible ; it is evenly rounded viewed both from above and in profile. The nostrils are dorsolateral in position and considerably closer to the tip of the snout than to the eye. The distance between the eye and the naris is greater than the internarial span (E–N/IN 1·267). The canthus rostralis is straight but not sharply defined ; the loreal region is gently sloping. The eye is large ; its diameter is considerably greater than the eye to naris distance.

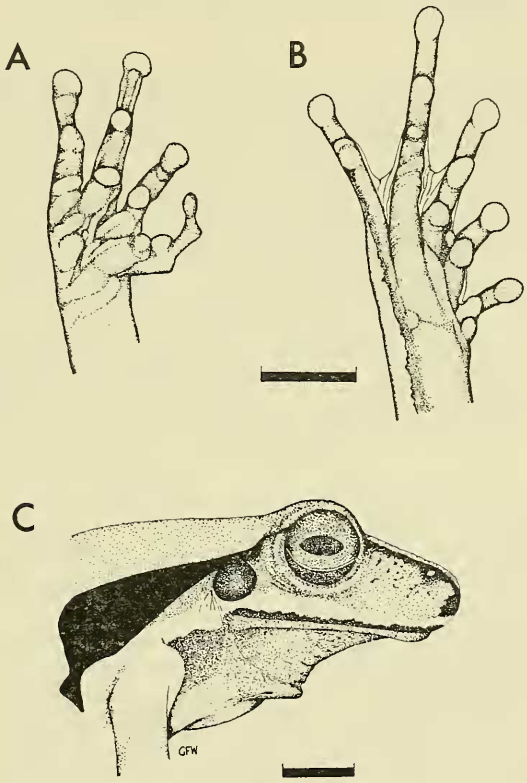

Fig. 1. *Litoria brevipalmata* new species, paratype female, M.U.Z.D. No. 13/70. (A) Palmar surface of hand. (B) Plantar surface of foot. (C) Lateral view of head. The bars represent 5 mm.

The tympanum is large and prominent, its diameter two-thirds of the eye diameter, and separated from the eye by a distance equal to about half the eye diameter. The upper margin of the tympanum is hidden beneath the supratympanic fold. The vomerine teeth are in two small series on prominent elevations directly between the choanae. The tongue is circular and almost completely adherent to the floor of the mouth.

The fingers are long, slender, unwebbed and without lateral fringes (Fig. 1 (A)). The sequence of decreasing length is 3>4>2>1. When the digits are extended the thumb is inclined at right angles to the fourth finger. Terminal discs are small, the diameter of that of the third finger being about one and one-half times the width of the penultimate phalanx.

The hind limbs are short ; the TL/S–V ratio is 0·459. Toes in decreasing order of length are 4>5>3>2>1. The webbing between the toes is greatly reduced, reaching the base of the penultimate phalanx of each toe except the fourth (Fig. 1 (B)). The toes have slender lateral fringes. There is a prominent oval inner and a very poorly defined and rounded outer metatarsal tubercle.

The dorsal surfaces of the head, body and limbs are entirely smooth, and the limbs lack dermal appendages. There is a prominent supratympanic fold extending from the eye to a position above the insertion of the arm. The ventral mandibular margin, the abdomen and the ventral surfaces of the thighs are granular, the granules progressively decreasing in size, but increasing in prominence, posteriorly. The skin of the submandibular and pectoral regions is smooth and distended as a result of inflation of the vocal sac. Nuptial pads are glandular.

The dorsal surfaces are a very pale, uniform brown, on which there is black stippling, so sparsely distributed as to be hardly visible. From the tip of the snout to the post-axillary region there is a black stripe, narrowest on each side of the eye and expanding behind the tympanum into a large black patch. A white stripe on the labial border expands posteriorly to form a white patch about the insertion of the arm. The striking contrast thus created is further emphasized by a black margin to the white stripe (Fig. 1 (C)). The posterior surfaces of the thighs, the axilla and the sides of the body bear black variegations and circular black spots on a pale grey background. The ventral surfaces of the body and limbs are a dull cream colour.

In life the dorsum was the colour of milk chocolate, and the groins, posterior surfaces of the thighs, and the axillary regions were very pale green.

Dimensions : snout to vent length 41·0 mm. ; tibia length 18·8 mm. ; head length 15·0 mm. ; head width 13·3 mm. ; eye to naris distance 3·8 mm. ; internarial span 3·0 mm. ; eye diameter 4·6 mm. ; tympanum diameter 3·0 mm.

Variation. There are three paratypes : Australian Museum No. R.30835, an adult male collected at Ourimbah Creek Road, 2 miles west of Ourimbah on 13th March, 1971, by J. Barker ; University of Melbourne, Department of Zoology (M.U.Z.D.) No. 13/70, an adult female collected 2·5 miles north-east of Byabarra (near Wauchope), N.S.W., on 28th January, 1970, by A. A. Martin and G. F. Watson ; and M.U.Z.D. No. 190/70, an adult female collected 4 miles west of Ourimbah, N.S.W., on 29th January, 1970, by Martin and Watson.

The male paratype has the same snout to vent length as the holotype ; the females measure 45·2 and 47·4 mm. respectively. In their proportions there is close agreement with those of the holotype, the ranges of the ratios used here to express such proportions being : E–N/IN 1·258–1·433 ; HL/HW 1·078–1·092 ; HL/S–V 0·336–0·349 ; TL/S–V 0·409–0·429. In life and in preservation colouration conforms closely to that of the holotype. Plate II shows a living female paratype.

Ovarian eggs in a gravid female in the series (M.U.Z.D. No. 13/70) are pigmented and have a diameter of about 1·4 mm.

Comparison with other species. The combination of external morphological characters by which we have defined *L. brevipalmata* is such that the species can readily be distinguished from all other species of *Litoria*. However, the nature of the combination is so unusual that the phylogenetic relationships to other species are difficult to establish.

There are a number of species of hylid frogs in New South Wales which possess elongate, unwebbed fingers with rather small terminal discs : *L. aurea* (Lesson), *L. booroolongensis* (Moore), *L. freycineti* Tschudi, *L. latopalmata* Günther, *L. lesueuri* (Dumeril and Bibron), and *L. nasuta* (Gray). They have been compared in such detail by Moore (1961) that we list here only a few of the salient

characters distinguishing them from *L. brevipalmata*. *Litoria aurea* is considerably larger (up to twice the size of *L. brevipalmata*), with extensively webbed toes ; *L. booroolongensis* is comparable in size but has longer hind limbs and webbing which reaches the discs of all toes. *Litoria freycineti* and *L. nasuta* are slender, elongate species with long hind limbs, long toes, and dermal ridges on the back ; interdigital webbing is reduced but still far more extensive than in *L. brevipalmata*. *Litoria latopalmata* is usually grey in preservative and also has long hind limbs and more extensively webbed toes.

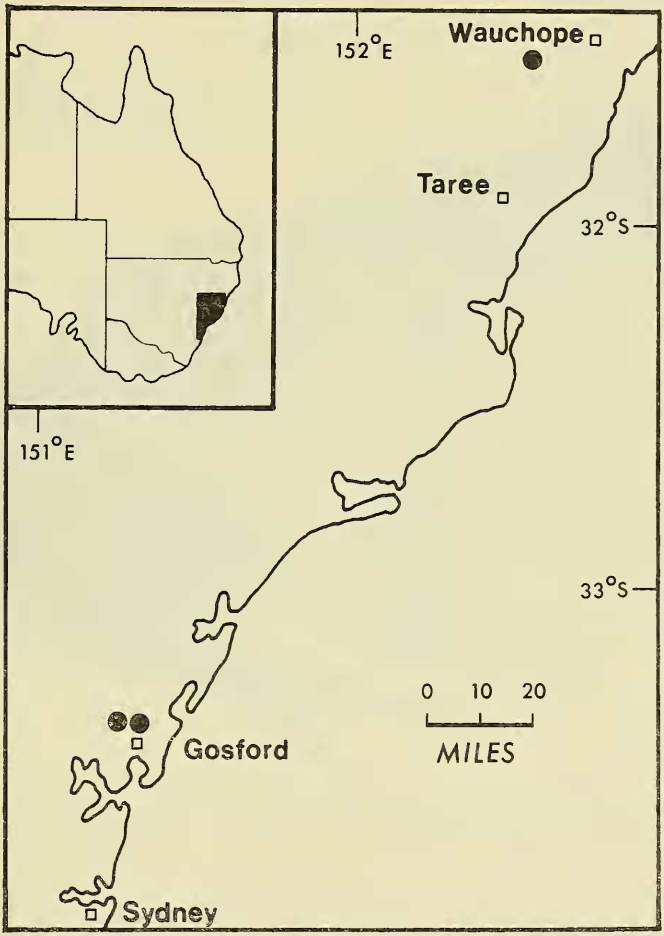

Fig. 2. Known geographic distribution of *Litoria brevipalmata*. The area involved is shown in black in the inset.

Despite a number of obvious morphological differences, *L. brevipalmata* may be most closely related to *L. citropa* (Tschudi), which has a similarly proportioned hand and foot and a broad post-ocular stripe reaching, and usually extending beyond, the post-axillary region. *Litoria citropa* is most readily distinguished by its larger size (females measuring up to 64 mm. in length). In addition *L. citropa* possesses a submandibular dermal gland which, when well developed, is visible as a broad glandular area adjacent to the lingual margin of the mandibles.

Field notes. The specimens collected near Byabarra and Ourimbah in 1970 were found hopping across roads on warm rainy nights. Other species of *Litoria* calling near Byabarra were *L. caerulea* (White), *L. dentata* (Keferstein), *L. glauerti*, *L. gracilenta* (Peters), *L. latopalmata* and *L. peroni* (Tschudi). With the exception of *L. gracilenta*, the same species were calling at Ourimbah, together with *L. chloris* (Boulenger), *L. freycineti*, *L. phyllochroa* (Günther) and *L. verreauxi*.

Distribution. *L. brevipalmata* is known only from the type series from the Ourimbah and Byabarra areas (Fig. 2). We presume that further collecting will reveal that *L. brevipalmata* occurs between, and perhaps beyond, the currently known localities.

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Living female specimen of *Litoria brevipalmata* (paratype, M.U.Z.D. No. 13/70).